

Listing of Claims:

This listing of claims reflects all claim amendments and replaces all prior versions, and listings, of claims in the application. Material to be inserted is in **underline and bold**, and material to be deleted is in ~~strikeout~~ or (if the deletion is of five or fewer consecutive characters or would be difficult to see) in double brackets [[]].

1. (Previously presented) A wireless data output method for outputting at one or more wireless output devices digital content accessed from a wireless mobile information apparatus without requiring a device-dependent output device driver specific to each one or more wireless output devices, the wireless mobile information apparatus including an interface for interacting with a user, one or more application software for providing functionalities to the wireless mobile information apparatus, an output management software for output of digital content from the wireless mobile information apparatus to a wireless output device, and a wireless communication unit for wireless communication with the one or more wireless output devices, the method comprising:

passing at the wireless mobile information apparatus at least part of digital content from the one or more application software to the output management software for wireless output;

searching at the wireless mobile information apparatus with the wireless communication unit and over radio frequency wireless communication for one or more wireless devices;

discovering at the wireless mobile information apparatus over the radio frequency wireless communication one or more wireless output devices;

selecting at the wireless mobile information apparatus a selected output device from among the one or more output devices discovered in the wireless search;

establishing a radio frequency wireless connection directly between the wireless mobile information apparatus and the selected output device for output of digital content directly from the wireless mobile information apparatus to the selected output device, the direct wireless connection not including an external output server between the information apparatus and the selected output device;

receiving at the wireless mobile information apparatus over the radio frequency wireless communication connection information or components from the selected output device for generating output data, the information or components being necessary for generating at the wireless mobile information apparatus an output data from the digital content suitable for transferring to the selected output device;

generating at the wireless mobile information apparatus an output data from the digital content for outputting at the selected output device, using at least partly the information or components received over the wireless communication connection; and

transferring the output data over the radio frequency wireless communication connection directly from the wireless mobile information apparatus to the selected output device for output.

2. (Canceled)

3. (Previously presented) The method of claim 1 in which the interface includes a touch-sensitive screen.

4. (Previously presented) The method of claim 1 further including obtaining the data content from a data source distinct from the wireless mobile information apparatus.

5. (Previously presented) The method of claim 1 further comprising obtaining authentication information from the wireless mobile information apparatus and authenticating permission for the wireless mobile information apparatus to access the selected output device.

6. (Previously presented) The method of claim 1 further including obtaining from the wireless mobile information apparatus payment information to administer payment for the outputting provided by the selected output device.

7. (Previously presented) The method of claim 1 further comprising receiving over the interface from the user at least an indication related to outputting digital content from the wireless mobile information apparatus.

8. (Previously presented) The method of claim 1 in which discovering the one or more output devices includes the wireless mobile information apparatus broadcasting a discovery request and awaiting one or more responses from the one or more output devices.

9. (Previously presented) The method of claim 1 in which passing at least part of digital content from the one or more application software to the output management software includes one or more of exchanging or transferring objects, messages, instances, procedural calls, files, and metafiles, individually or in any combination.

10. (Canceled)

11. (Previously presented) The method of claim 1 in which the discovering of one or more output devices involves determining if the one or more output devices satisfy one or more output requirements.

12. (Previously presented) The method of claim 11 in which the one or more output requirements include one or more of price, quality of service, and availability, individually or in any combination.

13. (Canceled)

14. (Previously presented) The method of claim 1 further comprising receiving over the radio frequency wireless communication one or more device-dependent attributes related to the discovered output devices for selecting at the wireless mobile information apparatus a selected output device.

15. (Previously presented) The method of claim 14 in which the one or more device dependent attributes includes one or more of a make identifier, a model identifier, an output device type identifier, an output data format identifier, an output device identifier, security information, or authentication information, individually or in any combination.

16. (Previously presented) The method of claim 1 in which the one or more application software comprises one or more of an e-mail, a messaging, a voice communication, an internet browsing, an image acquisition, a text processing, and a document creation software application, individually or in any combination.

17. (Previously presented) The method of claim 14 in which the one or more device dependent attributes includes one or more of a quality of service indicator, an availability of service indicator and a service fee indicator, individually or in any combination.

18. (Original) The method of claim 1 in which the selecting of the one or more output devices includes input from a user.

19. (Previously presented) The method of claim 1 in which the selecting of the one or more output devices is based at least in part upon a predetermined default criterion that is stored in the wireless mobile information apparatus.

20. (Previously presented) The method of claim 1 in which the information or components related to the selected output device includes one or more of data, parameters, algorithm, objects, meta files individually or in any combination.

21. (Previously presented) The method of claim 20 in which the components include software code or a software application.

22. (Canceled)

23. (Currently amended) The method of claim 20 in which the components correspond at least part of a component related to a device driver, a printer driver, an output driver, an audio driver, a display driver, and a user interface, individually or in any combination.

24. (Previously presented) The method of claim 1 in which the wireless mobile information apparatus includes at least one of a digital camera, an Internet-enabled cellular phone, a smart phone, an Internet appliance, or a personal computer, individually or in any combination.

25. (Previously presented) The method of claim 1 in which the one or more output devices include one or more of a printing device, a display device, a projection device, and an audio output device, individually or in any combination.

26. (Canceled)

27. (Canceled)

28. (Previously presented) The method of claim 1 in which generating output data includes at least partial raster image processing of the data content.

29. (Previously presented) The method of claim 1 further comprising installing and or executing at the wireless mobile information apparatus one or more components received over the wireless connection.

30. (Previously presented) The method of claim 1 further comprising driving at the wireless mobile information apparatus the output device employing at least in part the information or components received over the wireless connection.

31. (Previously presented) The method of claim 29 further including performing image processing on the output data at the selected output device.

32. (Canceled)

33. (Previously presented) A wireless data output method for outputting at a selected wireless output device digital content accessed from a wireless mobile information apparatus without requiring a device-dependent output device driver specific to the selected wireless output device, the wireless mobile information apparatus including at least a touch sensitive screen interface for interacting with a user and a wireless communication unit for wireless communication with the selected wireless output device, the method comprising:

receiving over the interface from the user at least an indication related to output of digital content to the selected wireless output device;

establishing a radio frequency wireless communication connection directly between the wireless mobile information apparatus and the selected output device, the direct wireless connection not including an external server between the information apparatus and the selected output device;

receiving at the wireless mobile information apparatus and over the radio frequency wireless connection one or more components or information from the selected output device for conforming digital content to an output data, the one or more components or information being necessary for conforming at the wireless mobile information apparatus the digital content to an output data that is suitable for transmitting to the selected output device;

conforming at the wireless mobile information apparatus the digital content to an output data that is compatible with the selected output device employing at least in part the one or more components or information; and

transmitting the output data from the wireless mobile information apparatus over the direct wireless connection to the selected output device for output.

34. (Canceled)

35. (Previously presented) The method of claim 33 in which the digital content resides in the wireless mobile information apparatus.

36. (Previously presented) The method of claim 33 further including obtaining the digital content from a data source distinct from the wireless mobile information apparatus.

37. (Previously presented) The method of claim 33 further comprising obtaining authentication information from the wireless mobile information apparatus and authenticating permission for the wireless mobile information apparatus to access the selected output device.

38. (Previously presented) The method of claim 33 further including obtaining from the wireless mobile information apparatus payment information to administer payment for outputting service provided at the selected output device.

39. (Previously presented) The method of claim 33 further including the wireless mobile information apparatus discovering the selected output device via radio wireless discovery.

40. (Previously presented) The method of claim 39 in which discovering the selected output device includes the wireless mobile information apparatus broadcasting a discovery request and awaiting a response from the selected output device.

41. (Previously presented) The method of claim 39 in which discovering the selected output device includes the selected output device broadcasting information about its availability and awaiting to be contacted by the wireless mobile information apparatus.

42. (Canceled)

43. (Currently amended) The method of claim 39 in which the discovering of the selected output device involves determining if the selected output device satisfies one or more of an output requirement, a service requirement, and a compatibility requirement, individually or in any combination.

44. (Previously presented) The method of claim 43 in which the one or more requirements include one or more of price, quality of service, and availability individually or in any combination.

45. (Previously presented) The method of claim 39 in which the wireless mobile information apparatus discovers the selected output device with wireless communication.

46. (Previously presented) The method of claim 33 in which the one or more components or information is or are stored in the selected output device.

47. (Previously presented) The method of claim 33 in which the one or more components or information is or are stored in an output controller associated with the selected output device.

48. (Previously presented) The method of claim 33 in which the one or more components include at least part of a component related to a printer driver, an audio driver, a display driver, and a projection driver, individually or in any combination.

49. (Previously presented) The method of claim 33 in which the one or more components include software code or a software application.

50. (Canceled)

51. (Previously presented) The method of claim 33 in which the one or more components include information relating to one or more of a projection device, a printer, a display device, an audio device, and a user interface, individually or in any combination.

52. (Canceled)

53. (Previously presented) The method of claim 33 further comprising installing at wireless mobile information apparatus at least part of the one or more components received over the direct wireless connection.

54. (Previously presented) The method of claim 33 further comprising executing at wireless mobile information apparatus at least part of the one or more components received over the direct wireless connection for driving the output device over the direct wireless connection.

55. (Previously presented) The method of claim 54 further comprising driving the output device over the direct wireless connection.

56. (Original) The method of claim 33 in which conforming the data content includes performing raster image processing on the data content.

57. (Previously presented) The method of claim 33 further including performing raster image processing on the output data at the selected output device.

58. (Currently amended) The method of claim 33 further including converting the output data into a form compatible to one of an output engine, a display engine, an audio engine, a printer engine, an output controller, a display controller, and a printer controller, individually or in any combination.

59. (Previously presented) The method of claim 33 in which the output data is further processed in an output controller associated with the selected output device before being delivered to the selected output device.

60. (Previously presented) The method of claim 33 in which the wireless mobile information apparatus includes one or more of a digital camera, an Internet-enabled cellular phone, a smart phone, an Internet appliance, and a personal computer, individually or in any combination.

61. (Previously presented) The method of claim 33 in which the output device includes one or more of a printing device, a display device, a projection device, and an audio output device, individually or in any combination.

62. (Original) The method of claim 33 in which the output data includes compressed data.

63. (Previously presented) In a non-transitory computer-readable storage unit, containing software program executable by a processor in a wireless mobile information apparatus for output of digital content from a the wireless mobile information apparatus to one or more output devices over wireless communication without requiring a device-dependent output device driver specific to each output device, the unit further comprising:

software for searching over a radio frequency communication channel at the wireless mobile information apparatus for one or more output devices;

software for receiving at the wireless mobile information apparatus over the radio frequency communication channel one or more device-dependent attributes corresponding to the one or more output devices;

software for selecting at the wireless mobile information apparatus a selected output device from the one or more output devices based at least partly on the one or

more device dependent attribute received over the radio frequency communication channel;

software for establishing a radio frequency wireless connection directly between the wireless mobile information apparatus and the selected output device for output of digital content directly from the information apparatus to the selected output device, the direct wireless connection not including an external output server between the information apparatus and the selected output device;

software for receiving at the wireless mobile information apparatus over the radio frequency wireless communication connection information or components from the selected output device, the information or component being necessary for generating at the wireless mobile information apparatus an output data from the digital content suitable for sending to the selected output device;

software for generating at the wireless mobile information apparatus an output data from the digital content based at least in part on the information or component receiving over the radio frequency wireless communication connection; and

software for sending the output data over the radio frequency communication connection directly from the wireless mobile information apparatus to the selected output device for output.

64. (Previously presented) The unit of claim 63 further including software executable by the processor at the wireless mobile information apparatus for discovering one or more output devices via wireless discovery.

65. (Previously presented) In a non-transitory computer-readable storage unit, storing data output software executable by a processor at a wireless mobile information apparatus for outputting digital content from the wireless mobile information apparatus to a selected output device over wireless communication, the wireless mobile information apparatus including software application being one or more of an e-mail, a messaging, a voice communication, an internet browsing, an image acquisition, a text processing, and a document creation, individually or in any combination, the unit further comprising:

software for obtaining at the wireless mobile information apparatus at least part of a digital content from the one or more software application for output over wireless communication;

software for establishing a radio frequency wireless communication connection directly between the wireless mobile information apparatus and the selected output device, the direct wireless connection not including an external output server between the information apparatus and the selected output device;

software for receiving at the wireless mobile information apparatus and over the radio wireless communication connection one or more components associated with the selected output device, the one or more components being necessary for conforming at the wireless mobile information apparatus the digital content to an output data that is suitable for transmitting to the selected output device;

software for conforming at the wireless mobile information apparatus the digital content to an output data employing at least in part the one or more components received over the radio wireless communication connection; and

software for transmitting the output data from the wireless mobile information apparatus to the selected output device over the radio wireless communication connection for output without requiring a device-dependent output device driver specific to the selected output device.

66. (Previously presented) A wireless data output method for output digital content accessed from a wireless mobile information apparatus to an output system, the output system including a wireless output controller and an output device, the wireless output controller for facilitating wireless communication, the wireless output controller being directly connected to the output device and dedicated to the output device, the wireless mobile information apparatus including one or more application software for providing functionalities to the wireless mobile information apparatus, an output management software to implement at least in part output of digital content from the wireless mobile information apparatus to the output system, and a wireless communication unit for wireless communication with the wireless output controller, the method comprising:

passing at the wireless mobile information apparatus at least part of digital content from the one or more application software to the output management software for wireless output;

discovering the wireless output controller via radio wireless discovery;

establishing a radio frequency communication connection directly between the wireless mobile information apparatus and the wireless output controller, the direct wireless connection not including an external output server between the information apparatus and the wireless output controller;

receiving at the wireless mobile information apparatus over the radio frequency wireless communication connection information or components related to the output system from the wireless output controller, the information or components being necessary for generating at the wireless mobile information apparatus an output data from the digital content suitable for sending to the output system;

generating at the wireless mobile information apparatus an output data from the digital content for output at the output system based at least in part on the information or components received over the radio frequency wireless communication connection; and

sending over the direct wireless connection the output data from the wireless mobile information apparatus to the wireless output controller for output at the output system without requiring a device-dependent output device driver specific to the output device.

67. (Canceled)

68. (Canceled)

69. (Previously presented) The method of claim 66 in which passing at the wireless mobile information apparatus at least part of digital content from the one or more application software includes using one or more of an application programming interface (API), an object model or a component model, individually or in any combination.

70. (Previously presented) The method of claim 66 further comprising selecting at the wireless mobile information apparatus the output system.

71. (Previously presented) The method of claim 66 in which passing at the wireless mobile information apparatus at least part of digital content from the one or

more application software includes transferring or exchanging one or more objects, messages, procedural calls, files, metafiles, and instances, individually or in any combination.

72. (Previously presented) The method of claim 71 in which the output devices being at least one of a display device, a projection device, a printing device, and an audio device, individually or in any combination.

73. (Currently amended) The method of claim 71 in which the wireless output controller is one of a server, an external controller and a data access point, individually or in any combination.

74. (Previously presented) The method of claim 71 further comprising receiving over an interface at the wireless mobile information apparatus from the user at least an indication related to output of digital content to the output system.

75. (Previously presented) The method of claim 74 in which the wireless output controller performs raster image processing on the output data.

76. (Previously presented) The method of claim 74 further including converting the digital content into a form compatible to the output device.

77. (Previously presented) The method of claim 74 further comprising the wireless output controller delivering the data content to the output device.

78. (Previously presented) A method for driving an output device from a wireless mobile information apparatus over wireless communication without requiring a device-dependent output device driver specific to the output device, the wireless mobile information apparatus including an interface for interacting with a user, and a wireless communication unit for wireless communication, the method comprising:

discovering at the wireless mobile information apparatus over the radio frequency wireless communication the output device;

establishing a radio frequency communication connection directly between the wireless mobile information apparatus and the output device, the direct wireless connection not including an external output server between the information apparatus and the output device;

receiving at the mobile information apparatus over the direct wireless communication connection one or more components from the output device for driving

the output device, the one or more components being necessary at least in part for driving at the wireless mobile information apparatus the output device;

executing at the wireless mobile information apparatus at least part of the one or more components received over the direct wireless connection for driving the output device over the direct wireless connection; and

driving at the wireless mobile information apparatus the output device over the direct wireless connection.

79. (Canceled)

80. (Previously presented) The method of claim 78 further comprising installing at the wireless mobile information apparatus at least part of the one or more components received over the direct wireless connection.

81. (Previously presented) The method of claim 78 further comprising sending at the wireless mobile information apparatus over the direct wireless connection an output data related to the digital content for output at the output device.

82. (Previously presented) The method of claim 78 in which the output device includes an output controller.

83. (Currently amended) The method of claim 82 in which the output controller is one of a server, an external controller, an internal controller, and a data access point, individually or in any combination, and the output controller being a wireless controller with a ~~direct~~ connection to the output device.

84. (Previously presented) The method of claim 82 in which the output controller receives the output data.

85. (Previously presented) The method of claim 82 in which the output controller performs raster image processing on the output data.

86. (Previously presented) The method of claim 84 further including converting the output data into a form compatible to the output devices.

87. (Previously presented) The method of claim 84 further comprising the output controller delivering the output data to the output device.

88. (Previously presented) The method of claim 82 in which the one or more components are stored in the output controllers associated with the output devices.

89. (Previously presented). The method of claim 78 in which the one or more components include at least part of a component related to a printer driver.

90. (Previously presented) The method of claim 78 in which the one or more components include software code or executable software.

91. (Cancelled)

92. (Currently amended) The method of claim 78 in which the one or more components relate to at least part of one or more of a device driver, a display driver, an audio driver, a projection driver, and an user interface, individually or in any combination.

93. (Previously presented) The method of claim 78 in which the one or more components include information characterizing an output service provided by the output device.

94. (Canceled)

95. (Previously presented) The method of claim 78 in which the wireless mobile information apparatus includes one or more of a mobile computing device, a pervasive device, an Internet-enabled cellular phone, a smart phone, an Internet appliance, a digital camera, and a personal computer, individually or in any combination.

96. (Previously presented) The method of claim 78 in which the output device includes one or more of a printing device, a projection device, a display device, and an audio output device, individually or in any combination.

97. (Currently amended) The method of claim 78 in which the radio frequency communication ~~channel~~ is compatible with a Bluetooth wireless protocol or with one operating within a IEEE 802.11 protocol.

98. (Currently amended) The method of claim 1 in which the radio frequency wireless communication ~~channel~~ is compatible with a Bluetooth wireless protocol or with one operating within a IEEE 802.11 protocol.

99. (Currently amended) The method of claim 33 in which the radio frequency wireless communication ~~channel~~ is compatible with a Bluetooth wireless protocol or with one operating within a IEEE 802.11 protocol.

100. (Currently amended) The unit of claim 65 in which the radio frequency wireless communication channel is compatible with a Bluetooth wireless protocol or with one operating within a IEEE 802.11 protocol.

101. (Previously presented) The unit of claim 65 further including software for discovering the output device via wireless discovery.

102. (Currently amended) A wireless mobile information apparatus for outputting digital content to one or more output devices over wireless communication, the wireless mobile apparatus comprising:

one or more application software;

an interface for interacting with a user;

a memory unit;

a radio frequency wireless communication unit; and

~~a processing unit for operating the radio frequency wireless communication unit to establish~~ **for establishing** a radio frequency communication channel **connection** directly between the wireless mobile information apparatus and the one or more output devices; **and**, the

a processing unit ~~further~~ being operable to execute software stored in the memory unit to:

receive at the wireless mobile information apparatus over the interface from the user at least an indication for outputting digital content;

pass digital content from the one or more application software for output over the wireless communication unit;

establish, **with the wireless communication unit,** a radio frequency wireless connection directly between the wireless mobile information apparatus and an output device for output of the digital content directly from the wireless mobile information apparatus to the output device, the direct wireless connection not including an external server between the information apparatus and the output device;

receive over the direct wireless connection information or components from the output device, the information or components being necessary at least in part for transmitting digital content to the wireless output device;

generate an output data from the digital content based at least in part on the information or components received over the wireless connection, and

transmit the output data over the radio frequency communication ~~channel~~ connection directly from the wireless mobile information apparatus to the output device for output without requiring a device-dependent output device driver specific to the output device.

103. (Previously presented) The apparatus of claim 102 in which the data content is stored in the memory unit of the wireless mobile information apparatus.

104. (Currently amended) The apparatus of claim 102 in which the radio frequency communication ~~channel~~ is compatible with a Bluetooth wireless protocol or with one operating within an IEEE 802.11 protocol.

105. (Previously presented) The apparatus of claim 102 in which the processing unit is further operable to execute software stored in the memory unit to discover the one or more output devices via wireless discovery.

106. (Previously presented) The apparatus of claim 102 in which the wireless mobile information apparatus includes at least one of a digital camera, an Internet-enabled cellular phone, a smart phone, an Internet appliance, and a personal computer, individually or in any combination.

107. (Previously presented) The apparatus of claim 102 in which the one or more output devices include at least one of a display device, a printing device, an audio output device, and a projection device, individually or in any combination.

108. (Previously presented) A wireless mobile information apparatus for driving an output device from the wireless mobile information apparatus over wireless communication without requiring a device-dependent output device driver specific to the output device, the wireless mobile apparatus comprising:

an interface for interacting with a user;

a memory unit;

a radio frequency wireless communication unit for establishing a radio frequency wireless communication channel directly between the wireless mobile information apparatus and the output device; and

a processing unit operable to execute software stored in the memory unit to:

establish a radio frequency communication connection directly between the wireless mobile information apparatus and an output device, the direct wireless connection not including an external output server between the information apparatus and the output device;

receive over the direct wireless communication connection one or more components for driving the output device, the one or more components being necessary at least in part for driving at the wireless mobile information apparatus the output device;

execute at least part of the one or more components received over the direct wireless connection for driving the output device over the direct wireless connection; and

drive the output device over the direct wireless connection.

109. (Previously presented) The apparatus of claim 108 in which the data content is stored in the memory unit of the wireless mobile information apparatus.

110. (Previously presented) The apparatus of claim 108 in which the radio frequency wireless communication channel is compatible with a Bluetooth wireless protocol or with one operating within an IEEE 802.11 protocol.

111. (Previously presented) The apparatus of claim 108 in which the processing unit is further operable to execute software stored in the memory unit to discover the one or more output devices via wireless discovery.

112. (Previously presented) The apparatus of claim 108 in which the wireless mobile information apparatus includes at least one of a digital camera, an Internet-enabled cellular phone, a smart phone, an Internet appliance, and a personal computer, individually or in any combination.

113. (Currently amended) The apparatus of claim 108 in which the output device includes at least one of a display device, a printing device, an audio output device, an output controller, and a projection device, individually or in any combination.